

FIGURE 1

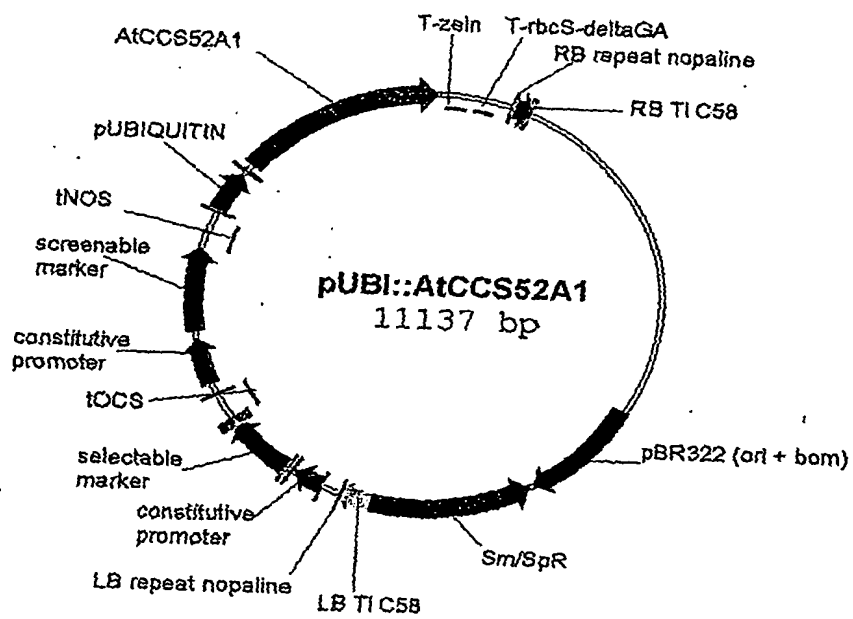
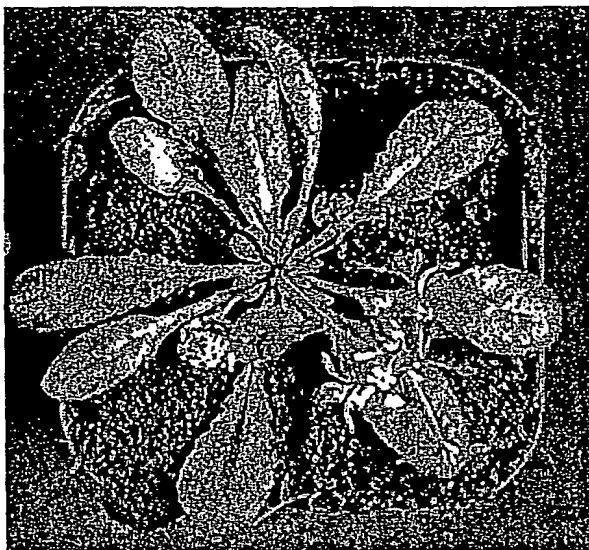
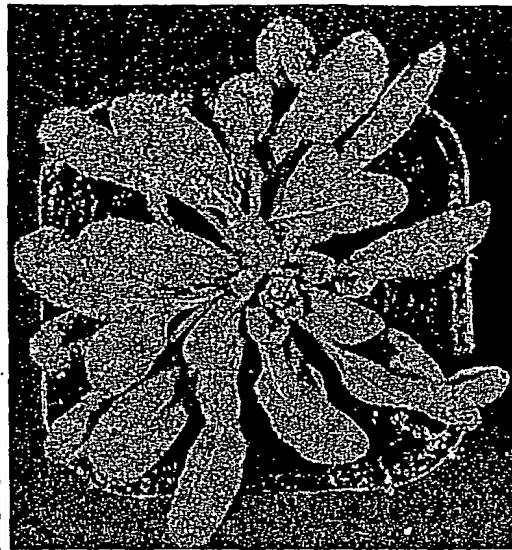


FIGURE 2

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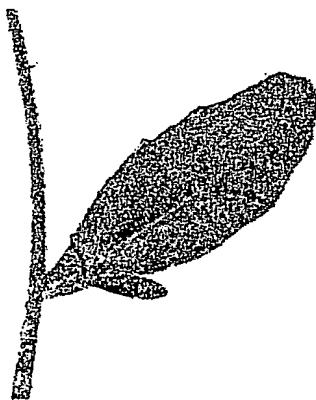


Wild type

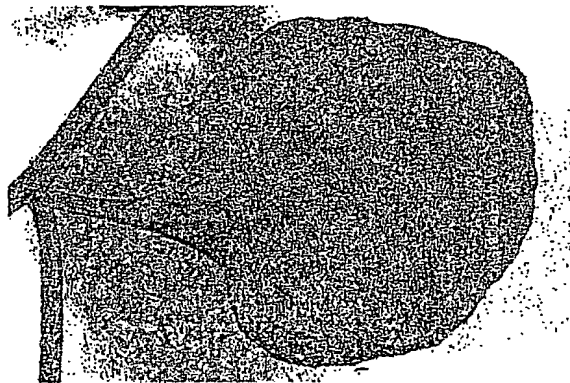


Transgenic: pUBI::AtCCS52A1

FIGURE 3



Wild type

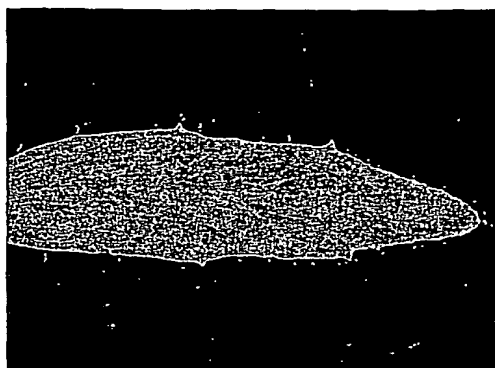


Transgenic: pUBI::AtCC S52A1

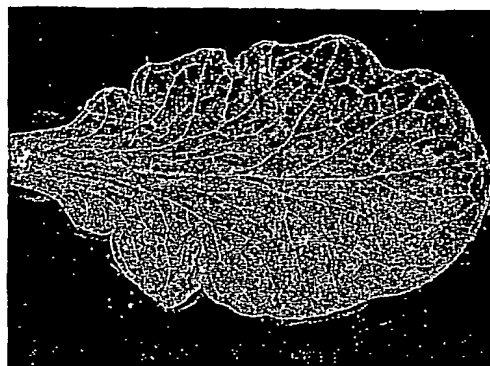
FIGURE 4

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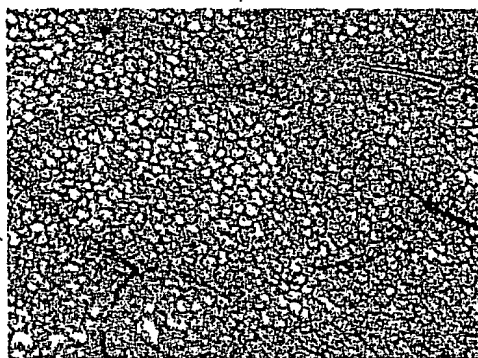


Wild type

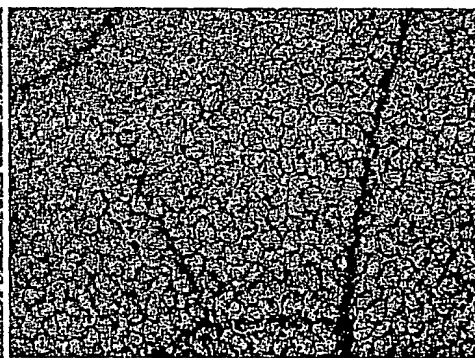


Transgenic: pUBI::AtCCS52A1

FIGURE 5



Wild type



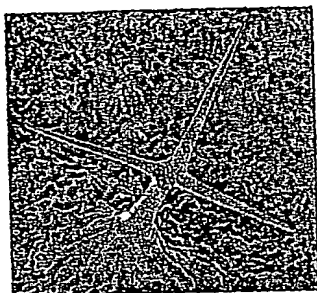
Transgenic: pUBI::AtCCS52A1

FIGURE 6

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A Wild type



B Transgenic: pUBI::AtCCS52A1

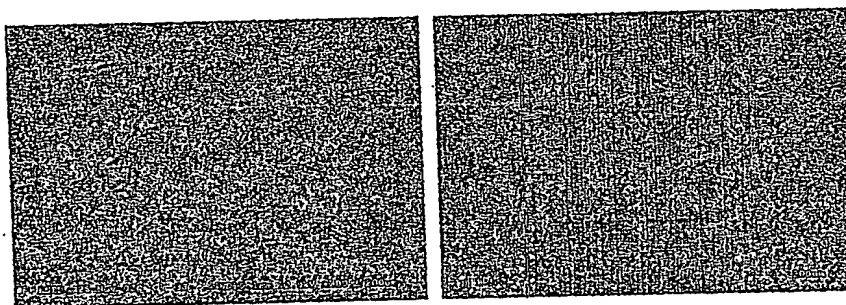


FIGURE 7



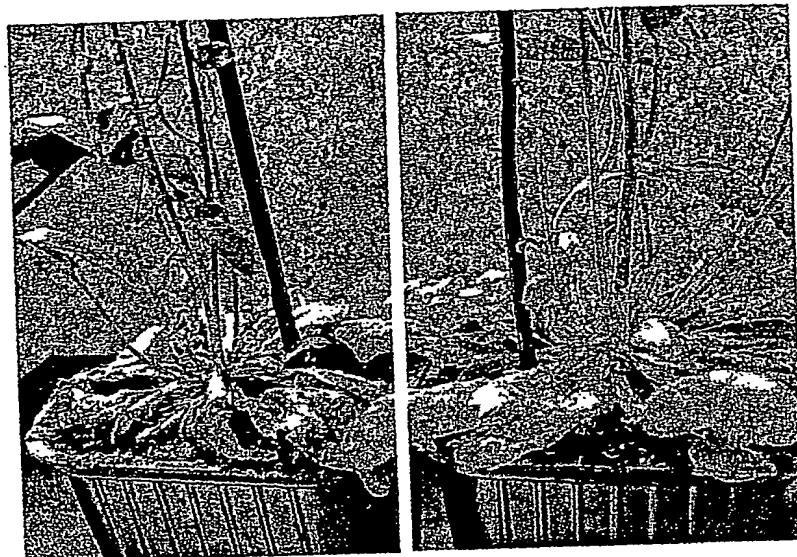
Wild type

Transgenic: p2S2::AtCCS52A1

FIGURE 8

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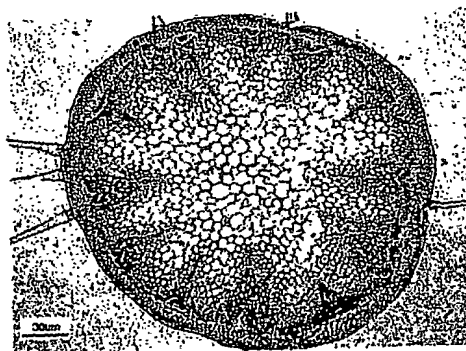
Wild type

Transgenic: pUBI::AtCCS52A1

FIGURE 9



Wild type



Transgenic: pUBI::AtCCS52A1

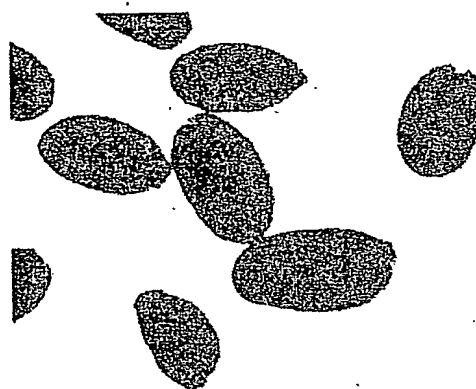
FIGURE 10

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Wild type



Transgenic: pUBI::AtCCS52A1

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FIGURE 11

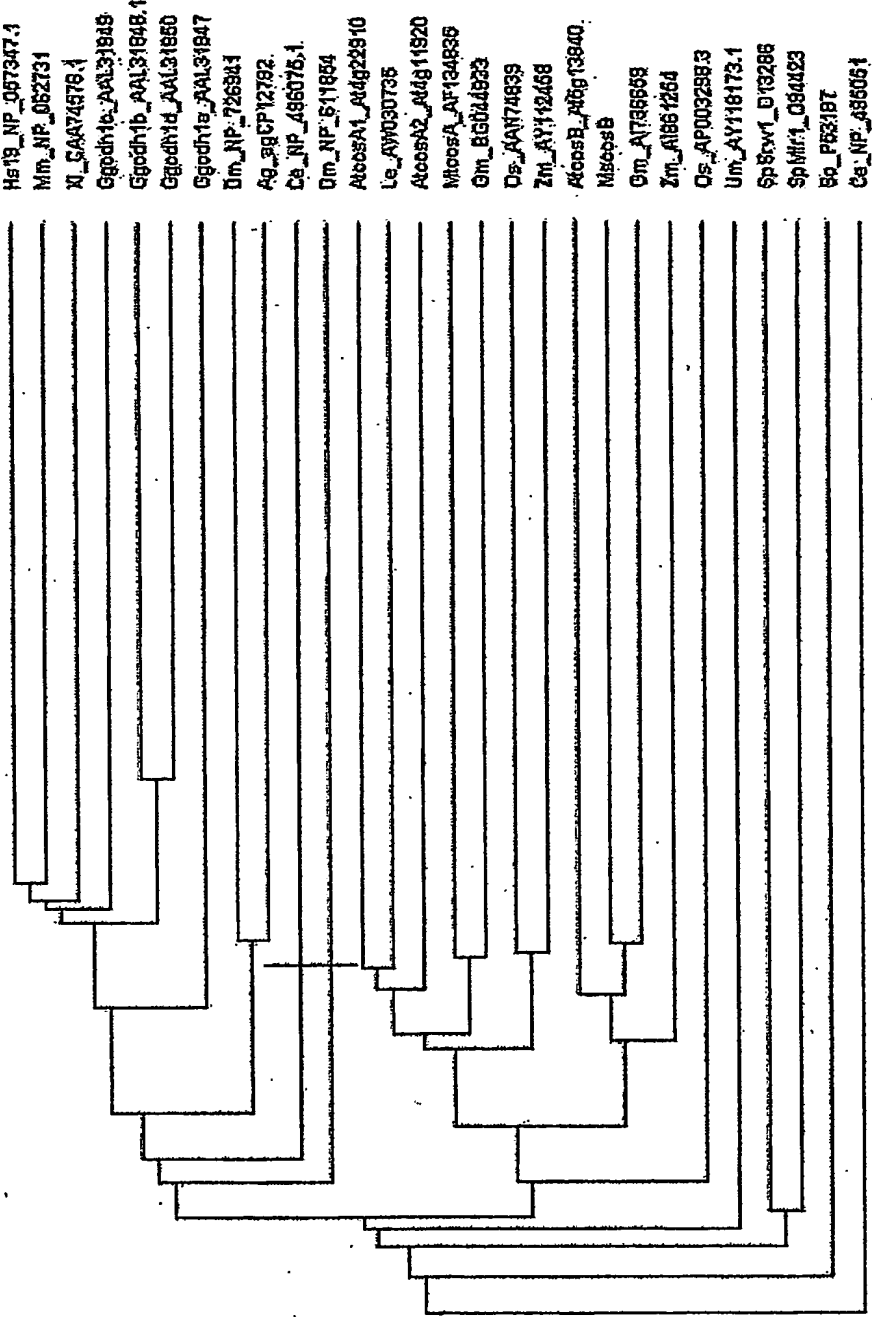


FIGURE 12

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CCS52 motifs

Gene	C-box	Motif 1
AtCCS52A1 (At4g22910)	62 DRFIPSR 68	70 GSNFALFDL 78
AtCCS52A2 (At4g11920)	53 DRFIPSR 59	61 GSNFALFDL 69
AtCCS52B (At5g13840)	46 DRFIPCR 52	54 SSR LHAFDL 62
Rice CCS52A (AKO70642)	52 DRFIPSR 58	60 GSNLALFDL 68
Consensus	DRFIPXR	XSXXXXFDL
SEQ ID NO	SEQ ID NO 16	SEQ ID NO 7

Motif 2	Motif 3	Motif 4
88 EDGAGSYATLLRAAMFG 104	117 SSSRNIFRFTETHRSL 133	207 SKVTKL 211
81 EDGAGSYASLLKTALFG 97	111 SPSTNIFRFTETQSRSL 127	198 SKVTKL 202
73 EGGNEAYSRLKSELFG 89	111 SPCTNMLRFTDRSNS 129	203 SKVTKL 207
93 TPASSPYCALLRAALFG 109	137 PATGNIFRFAEVPRNA 152	228 SKVTKL 232
XXXXXXXXXXLLXXXXFG	XXXXXXXREKX (2 or 4) RXX	SKVTKL
SEQ ID NO 8	SEQ ID NO 9	SEQ ID NO 10

Motif 5	Motif 6
289 DHVSKLAGHKS 300	329 HSTQPVLYKYSEH 340
283 DHVSKLKGHKS 293	330 HSTQPVLRFCHEH 341
288 DFVSKLVGHKS 298	335 HSQQPILKLTEH 346
313 DYISRLAGHKS 323	352 HSAHPVLKYTEH 363
DXXSXLXGHKS	HSXXPXLXXXEH
SEQ ID NO 11	SEQ ID NO 12

Motif 7	Motif 8	Motif 9
371 WNTTNTNTHLSSIDT 384	403 LYLAVSPDGQTIVT 416	471 EIGSSFFGRITIR 483
364 WNTTNTNTHLNCVDT 377	426 LYLAVSPDGQTIVT 439	463 EIGALSFGRTTIR 476
369 WNTTNGNQLNSIDT 382	431 LYLATSPDGQTIVT 444	469 DTGLWSLGLTQIR 481
394 WNTTNTMHLNCVDT 107	456 LYLAI SPDGQTIVT 469	495 SIGATSFVRSYIR 508
WNTTXXXXLXXXDT	LYLAXSPDGQTIVT	XXGXXXXXXXXXIR
SEQ ID NO 13	SEQ ID NO 14	SEQ ID NO 15

FIGURE 13

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SEQ ID NO 1: *Arabidopsis thaliana* CCS52A1 cDNA, At4g22910

ATGGAAGAAGAAGATCCTACAGCAAGCAATGTGATAACGAATTCGAATTCTTCATCTATGAG
AAACCTATCGCCGGCGATGAATACTCCGGTGGTTTCACTTGAGTCACGAATCAATCGATTAA
TCAATGCTAATCAATCTCAATCACCATCACCATCATCACTATCAAGGTCTATATACTCTGAT
AGATTTATCCCCAGTAGATCCGGATCCAATTTGCTCTTTTCGATCTATCTCCTTCTCCTAG
TAAAGATGGTAAGGAAGATGGAGCTGGCTCTTACGCTACTCTGTTGCGTGCGGCGATGTTTG
GTCCTGAGACGCCGGAGAAGAGAGATATTACTGGGTTTTCTTCTTCCAGGAATATTTTAGG
TTTAAGACGGAGACTCATCGGTCTTTGAATTCGTTTTCTCCTTTTGGTGTGATGATGATTC
TCCTGGTGTTTCTCATAGTGGTCTGTAAAGCTCCAGGAAAGTGCCGCGATCGCCGTATA
AGATTCCTGATCTCGTTGACTTTAGATCTTTGGTTTCGATAATGCATGAAACAATTTGTGAT
CTTTGTGATGTTTTGGTCTCTGAGGGTCTAGAATTTGAGTCTGAGGTATTGGATGCACCGGC
CTTGCAAGATGATTTTTATCTGAATCTTGGAATGGTCTGCACAAAATGTTCTAGCAGTGG
GACTAGGGAAGTGTGTGATTTATGGAATGTCTGTAGCAGCAAGGTTACTAAGTTATGTGAT
CTCGGAGCTGAGGATAGTGTGCTCAGTGGGTTGGGCGTTACGTGGAAGTCTCATCTGGCTGT
TGGAAGTGTACCGGGAAAGTTCAGATATGGGATGCGTCACGCTGCAAGAGACAAGAACA
TGGAAGGTCATCGTCTAAGAGTTGGAGCCCTGGCATGGGGTTCATCGGTTCTGTCATCTGGT
AGCAGAGACAAGAGTATTCCTCAGAGAGACATAAGGTGTCAAGAAGATCATGTCAGTAAATT
GGCAGGTCATAAATCTGAGGTATGCGGACTCAAGTGGTCTTATGACAACAGAGAGCTAGCAT
CTGGTGGAAACGACAATAGGCTTTTTGTATGGAACCAACATTCAACACAACCGGTTTTGAAA
TATAGTGAACACACTGCAGCTGTTAAAGCCATTGCTTGGTCTCCTCATGTTTCATGGGCTTCT
TGCTTCTGGTGGTGGTACTGCTGATAGATGCATACGTTTTTGGAAATACAACCACGAATACTC
ATTTAAGTTCATAGATACTTGAGTCAAGTATGCAATCTAGCTTGGTCTAAGAAGCTAAAC
GAGCTTGTAGCACACACGGATACTCTCAGAACCAATCATTGTCTGGAAATACCAACCAT
GTCCAAAATTGCTACTCTAACCGGTACACATACCGAGTCTTATACCTTGCGGTTTCACCCG
ATGGACAGACGATTGTAACAGGAGCAGGAGATGAAACCTTAAGGTCTGGAATGTTTTCCCT
TCCCCAAAATCTCAGAACACGGATAGTGAATCGGGTCGTCTTTCTTGGTAGAACAACAAT
TCGGTGAGAAAGTTACTTTCAAAACACACAGAAAAGTCATAAATCTTGATTTCTTCAGCAG
CAGCCAGCTTGAGTTGGTCTCAACCAACTTTTTTACACGGGAGCAGAGAGTCATTAA
TTCTTTTACACACGGATGCAACAAGATCTAACCCTTTTGATTTAATCACGATCTTTGGGTTT
CCATCAAGATGCACAACATTTTCCCCAAAATTTTCAAAGTGATATCTTTATTCAATTTT
TCTTCATATATCAAAATATAGTTTCTTTTGTATTTATTTACTTACGAACACAACATTTTATA
AAATAAGCCCATGATAATAATGCAATAATTCGTTACCATTCTCTT

SEQ ID NO 2: *Arabidopsis thaliana* CCS52A1 protein

MEBEDPTASNVITNSNSSSMRNLSPAMNTPVVSLESRLINANQSQSPSPSSLSRSIYSD
RFIPSRSGSNFALFDLSPSPSKDGKEDGAGSYATLLRAAMFGPETPEKRDITGFSSSRNI FR
FKTETHRSLNSFSPFGVDDDSPGVSHSGPVKAPRKVPRSPYKILDLDVDFRSLVSIHETI CD
LCDVLVSEGLEFESEVLDAPALQDDFYLNLDVWSAQNVLA VGLGNCVYLWNACSSKVTKL CD
LGAEDSVCSVGWALRGTHLAVGTSTGKVQIWDASRCKRTRTMEGHRLRVGALAWGSSVLS SG
SRDKSILQRDIRCQEDHVS KLAGHKSEVCGLKWSYDNRELASGGNDNRLFVWNQHSQPV LK
YSEHTAAVKALAWSPHVHGLLASGGGTADRCIRFWNTTTNTHLSSIDTCSQVCNLAWSKNVN
ELVSTHGYSQNQIIIVWKYPTMSKIATLTGHTYRVLVLA VSPDGQTI VTGAGDETLRFWNV FP
SPKSQNTDSEIGSSFFGRRTIR

FIGURE 14

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SEQ ID NO 3: *Oryza sativa* CCS52A cDNA, AKO70642

ATCCCCAAATCTCTCGCCCCACCCATGGATCACCACACCACCACCTGCCGCCGCCGCCG
CGCGGTGCGCGATGGAGAACTCCGCGTCTCTCAAGCCGCCACCCCGCGTCCACCCCGTCG
TCGCGCCTCGCGCGCGCGCGTCTCTCCGCGTCTCTCCGCGGCGCGCACCCCTCCCGTC
CTCTCCGCGCCACGCCGCGCTCGCGACGGTCTACAGCGACCGTTTCATCCCCAGCCGCG
CCGGATCCAACCTCGCGTCTTCGACCTCGCCCCGTCGCCGTCCCACCACGACGCCGCCGCC
GCCGCCGCTCCCCCGCGCGCGCGCCCCCTCCGGATCTACCCCGGCTCGTCGCCCTACTG
CGCGTCTCTCCGCGCGCGCTCTTCGGCCCCACCACGCCCGACCGGTGGCGTCGTCGGCGT
CCGCGTGCTCTCTCTCTCTCTCCGCGGGGCGTCGCCGTGGGCTCACCCGCCACCGGCAAC
ATATTCAAGGTCAGGTCGCGCGGAGGTGCCCCGGAATGCTAAGCGCGCCCTTTTCTCCGACGGGA
CGACGAGGGCGTGCTCTTCCCCGGGTGTTACGACGAGGGGCACTGGCCCCAGGAAGATCC
CTAGGTCACCTTATAAGGTGCTGGATGCTCCCGCATTCGAGGATGACTTCTACCTGAACCTT
GTGGATTGGTCTTCGCATAATATCCTTGAGTTGGATTGGGGAATTGTGTCTACTTTATGGAA
TGCATGCAGCAAGGTCACCAAGCTATGTGATTGGGGGTGGATGACAATGTCTGTTTCAG
TGGGTGGGCGACAGCGTGGCACTCACCTTGCTGTAGGGACAAACCAAGGCAAAGTTTCAGGTA
TGGGATGCCACTCGTTGTAAGAGAATAAGAACCATGGAAAGCCATCGGATGCGAGTAGGTGC
TCTTGCGATGGAATTCATCATTGCTTTCGTCAGGCAGTCGTGACAAGAGCATCCTTCACCATG
ATATCCGTGCCAGGATGATTATATTAGTAGACTTGCTGGGCATAAATCGGAGGTCTGTGGG
CTCAAGTGGTCTTATGATAACCGTCAGCTTGTCATCTGGTGGTAATGACAACAGACTTTATGT
ATGGAATCAACACTCGGCGCACCCGGTACTGAAGTATACTGAGCATAACAGCAGCTGTCAAAG
CTATTGCGTGGTCACCTCATCTTCATGGGCTGCTTGTCATCTGGTGGAGGAAGTGCAGATAGA
TGCATACGATTTTGAATACCACCACGAATATGCACCTAAATTGCGTCGACACAGGCAGTCA
GGTCTGTAATCTTGTATGGTCAAAGAATGTTAATGAGCTTGTTAGCACTCATGGATATTCTC
AAAATCAGATAATTGTTTGGCGATAACCAACAATGTCAAAGCTCGCCACATTGACAGGCCAT
ACATATAGGGTATTATATTTAGCCATCTCCCAGATGGACAGACTATAGTAACTGGCGCTGG
TGATGAAACGCTTCGGTTTTGGAACGTGTTCCATCTCCAAGTCCCAGAGTTCTGACAGCC
TAAGTAGCATCGGGGCCACATCATTGTAGGAGCTACATCCGGTGACACTGAGATGTGGTA
ATCTAATAACACTTGGCTCATAAGTCATAAACAATACTGCAGCAGAGTGTGATGATCATCAA
TATCATTCCATTGTACCCTTGTCATCACCAGTTCATGAACCATCAAACCTAGCCAAATTTT
AGAGATAGTAGGATGCAGAATGGTGAAGTGGCTCGCAGACCTCGGAGTGGCTCATTGTGCTG
AATGCTGTATATATTTATTCATTGGCTTTGTAGGAGCGAAGATGGCAAACACTGACCATCCG
CAATGTACCATTGATAAGTTCACGGCCTCCTGTTTTTGTGTTTGTGCTGAGTCAACTTGGAGCT
GGAGCTCTTATGTATACCATGCTAGGGCTTAACAACATTGGCCAACCTCATGATGCTCATTCG
ATCCAAGTTGGAATATGCTAAGGAAGCTGGAGAATTTCTGGTGC

SEQ ID NO 4: *Oryza sativa* CCS52A protein

MENSASSKPPTPASTPSSRLAAAPSSRVSSAAPHSPSSSAPTASRTVYSDFIPSRAGSN
LALFDLAPSPSHDAAAAAASPGAPPPSGSTPASSPYCALLRAALFGPTTPDRVASSASA CS
SSSSAGASPVGSPATGNIFRFKAIEVPRNAKRALFSDGDDEGVLPFGVFTTRGTGPRKIPR SP
YKVLDAAPALQDDFYLNLDWSSHNILAVGLGNCVYLWNACSSKVTKLCDLGVDDNVCSVGWA
QRGTHLAVGTNQGKVQVWDATRCRIRTMESHMRVVGALAWNSSLSSGSRDKSILHHD I RA
QDDYISRLAGHKSEVCGLKWSYDNRQLASGGNDNRLYVWNQHSAPVVKYTEHTAAVKAI AW
SPHLHGLLASGGGTADRCIRFWNTTNNMHLNCVDGTGSQVCNLVWSKNVNELVSTHGYSON QI
IVWRYPTMSKLTATLTGHTYRVLILAISPQGQTIIVTGAGDETLRFWNVFPSPKSSQSSDLS SI
GATSFVRSYIR

FIGURE 14 (continued)

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SEQ ID NO 5: *Oryza sativa* genomic DNA encoding CCS52B protein, AP003298

ATGCTAATGGGCGGCGCCGCATGGCAGAGAGAGTACAACGGCTACTCGGGTGGGGGGCCAC
AGTCAGAGGGGAGACAGCTCGTGCTAGAAAAAGTAGGCGACTTGCCCACTCCAACCAAAGTGA
CCGTTGCAACCTCATCTCCGCTCCTCTTCTCCTCCTCGTCGTCGTTGTCGTCGTCGGCGGC
GCATCCAGCCTCGACGTGCCGCGCGCGCCGCGCGCCGCGCGCTCAACGTGCCGCGGCGAT
GGCGGGGGGGCTCCGCTCGATCCCGCCGTGCGCTCCCCGGCGCCGCTCCTCCTCGACGTCC
CCAAGACGCCATCCCCTTCCAAGACCAGTACAGCGACCGCTTCATCCCCTGCCGCTCCTCC
TCCCGCCTCCACAACCTTCGCCCTCCTCGACCGCGACCGCGCCTCCCCCTCCTCCACCACCGA
CGACGCCCCCTACTCCCGCCTCCTCCGCGCCGAGATCTTCGGCCCGGACTCCCCCTCCCCGG
CTCCCTCCTCCCCAACACCAACCTCTTCCGCTTCAAGACCGACCACCCCTCGCCCAAATCG
CCCTTCGCCGCTCCGCCCGCCGACCGCGGCCACTACGACTGCACCGCGGCTCCGCTGA
ATCCTCCACGCCGCGCAAGCCGCCCAGGAAGTCCCCAAGACCCCGCACAAAGTCTCGGACG
CGCCGTGCGCTGCAGGACGACTTCTACCTCAATCTTGTGCGACTGGTCGTCGAGAACACGCTC
GCCGTGCGCCTCGGGAATTGCGTCTACCTCTGGTTCGGCTTCCAATTGCAAGGTCACCAAGCT
CTGCGATTTGGGGCCAGGGACAGCGTCTGCGCTGTGCACTGGACCCGAGAAGGCTCCTATC
TTGCCATCGGCACCAGCCTTGGCGATGTCCAGATTTGGGATAGCTCTCGCTGTAAACGGATT
AGGAACATGGGAGGACACCAACACGGACTGGTGTATTAGCATGGAGCTCCCGAATCTTGTC
CTCCGGTAGCAGGGACAAGAACATATTGCAGCATGACATCCGTGTCCAAGTGACTATATCA
GCAAGTTCTCAGGGCACAGATCAGAGAACCATGTATGTGCATCAAGTGACAGTTTTTTTTGGT
CAGGTCTGTGGACTGAAATGGTTCGCACGACGACCGTGAGCTTGCAATCCGGTGGAAATGATAA
TCAGCTGCTAGTATGGAACCAACGTTTCGCAGCAGCCGATATTGAGGCTGACAGAACACACAG
CTGCAGTTAAAGCAATAGCATGGTCAACACATCAGCAAGGCCTCCTGGCATCAGGTGGTGGA
ACCGCTGATAGGTGTATCAGGTTCTGGAACACGGTTAATGGAACATGCTGAATTAGTGGA
CACAGGCAGCCAGGCGACTTGTGAGCACTCATGGGTATTCCCAAACCAATCATGGTGTGG
AAGTACCCATCTATGTCAAAGGTTGCTACTCTAACTGGACACACGCTGCGAGTGCTTTACCT
TGCAATGTACCAACAATAGTAACAGGAGCCGGGGATGAAACCCCTCAGATTTTGAATATTTT
TCCTTCAATGAAGACACAGGTAGGCATCTATTGTTGA

SEQ ID NO 6: *Oryza sativa* CCS52B protein, BAB98864

MLMGRPAWQREYNGYSGGGPTVRGRQLVLEKVGDLPTPTKVTVATSSPLLFLLLVVVVVVG
ASSLDVPAAPAPRLNVPPAMAGGLRLDPAVASPARLLLDVPKTPSPSKTTYSDRFIPCRSS
SRLHNFALLDRDRASPSSTDDAPYSRLRLRAEIFGPDSPSPAPSSPNTNLFKTDHPSPKS
PFAASAAATAGHYDCTAGSAESSTPRKPPRKVPKTPHKVLDAPSLQDDFYLNLDWSSQNTL
AVGLGNCVYLWSASNCKVTKLCDLGPDRDSCAVHWTREGSYLAIGTSLGQDVQIWDSSSRCKRI
RNMGGHQTRTGVLAWSSRILSSGSRDKNILQHDIRVPSDYISKFSGHRSENHVCASSDSFFG
QVCGLKWSHDDRELASGGNDNQLLVWNQRSQQPILRLTEHTAAVKAIAWSPHQQGLLASGGG
TADRCIRFWNTVNGNMLNSVDTSQATCEHSWVFPKPNHGVEVPIYVKGCCYSNWTHAASALP
CNVTTIVTGAGDETLRFWNIFPSMKTQVGIYC

SEQ ID NO 7: consensus motif 1 of CCS52 protein

XSXXXXFDL

FIGURE 14 (continued)

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SEQ ID NO 8: consensus motif 2 of CCS52 protein

XXXXXXXXXXLLXXXXFG

SEQ ID NO 9: consensus motif 3 of CCS52 protein

XXXNXXRFX_(2 or 4)RXX

SEQ ID NO 10: consensus motif 4 of CCS52 protein

SKVTKL

SEQ ID NO 11: consensus motif 5 of CCS52 protein

DXXSXLXGHKS

SEQ ID NO 12: consensus motif 6 of CCS52 protein

HSXXPXLXXEH

SEQ ID NO 13: consensus motif 7 of CCS52 protein

WNTTXXXXLXXXDT

SEQ ID NO 14: consensus motif 8 of CCS52 protein

LYLAXSPDGQTIVT

SEQ ID NO 15: consensus motif 9 of CCS52 protein

XXGXXXXXXXXXIR

SEQ ID NO 16: consensus C box

DRFIPXR

SEQ ID NO 17: consensus motif 1 of CCS52A proteins

GSN(F/L)ALFD(L/I)

SEQ ID NO 18: prm03191

GGGGACAAGTTTGTACAAAAAGCAGGCTTCACAATGGAAGAAGAAGATCCTACAGC

SEQ ID NO 19: prm01392

GGGGACCACTTTGTACAAGAAAGCTGGGTTTCTCACCGAATTGTTGTTCTAC

FIGURE 14 (continued)

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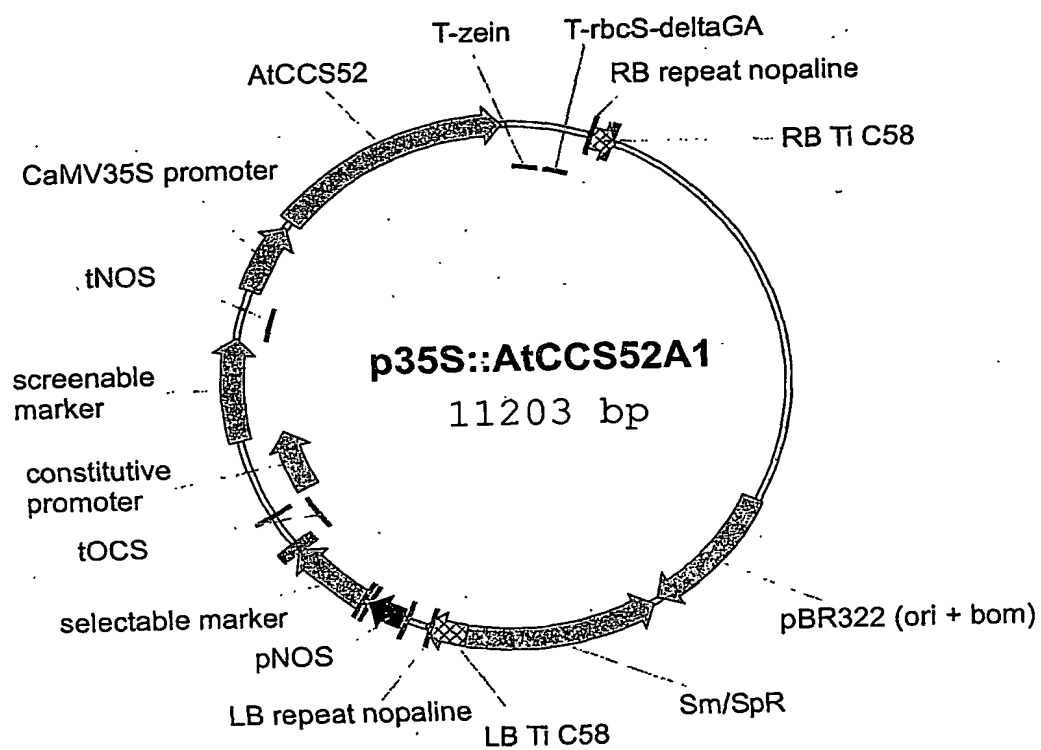
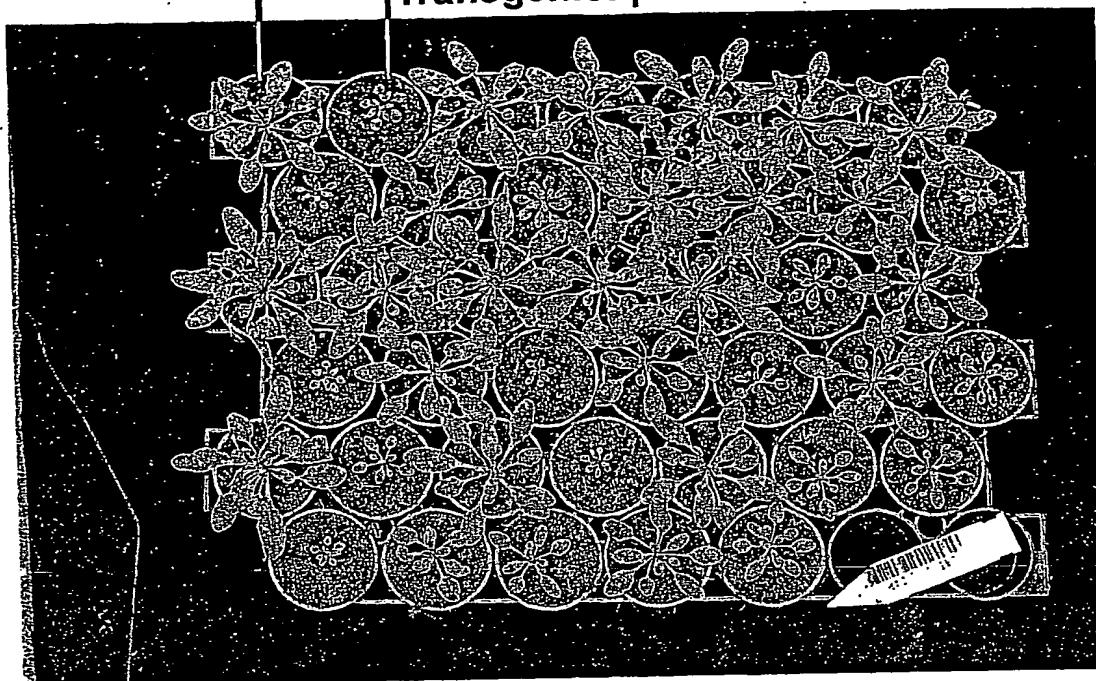


FIGURE 15

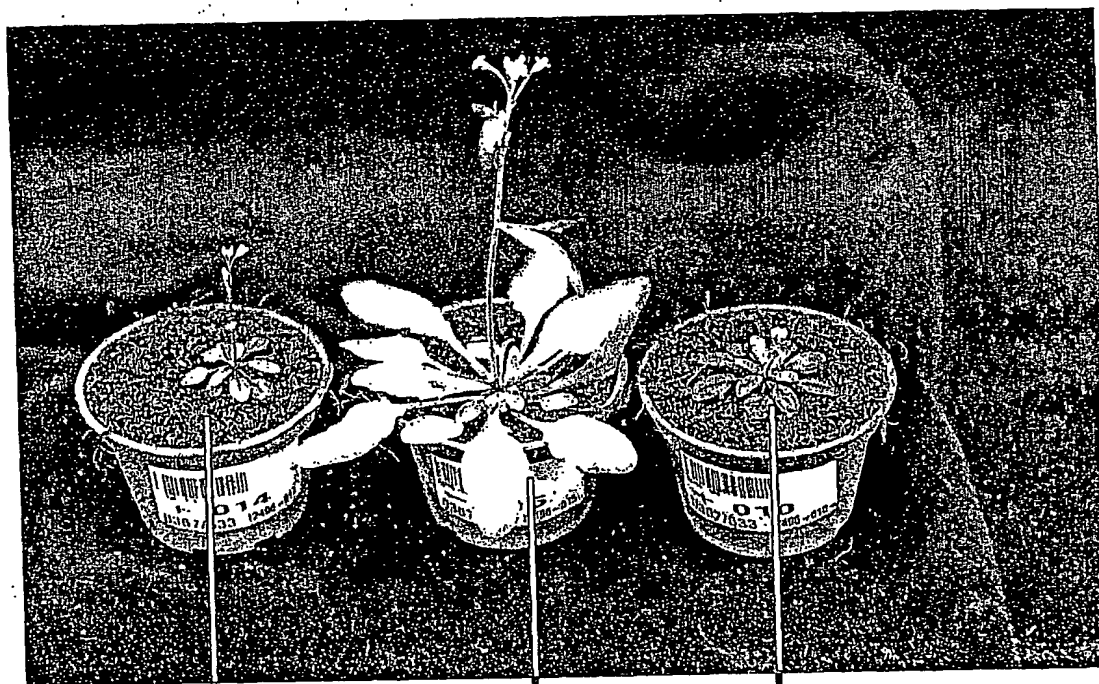
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Wild type

Transgenic: p35S::AtCCS52A1



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Transgenic:
p35S::AtCCS52A1

Wild type

Transgenic:
p35S::AtCCS52A1

FIGURE 16

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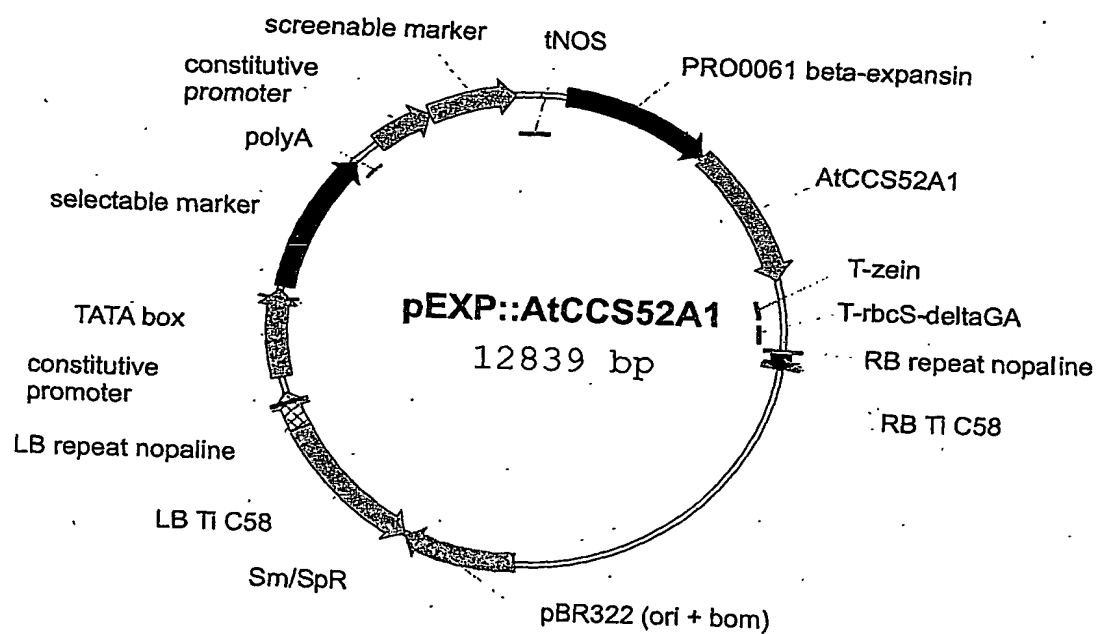


FIGURE 17